

# WASHINGTON

## LEGEND

— County boundary

★ Capital

● City

**1** — Crushed stone/sand and gravel districts

## MINERAL SYMBOLS (Major producing areas)

Ag Silver

Al Aluminum plant

Au Gold

Cem Cement plant

Clay Common clay

CS Crushed stone

Dia Diatomite

Gem Gemstones

Gyp Gypsum plant

Lime Lime plant

Mg Magnesium metal plant

O Olivine

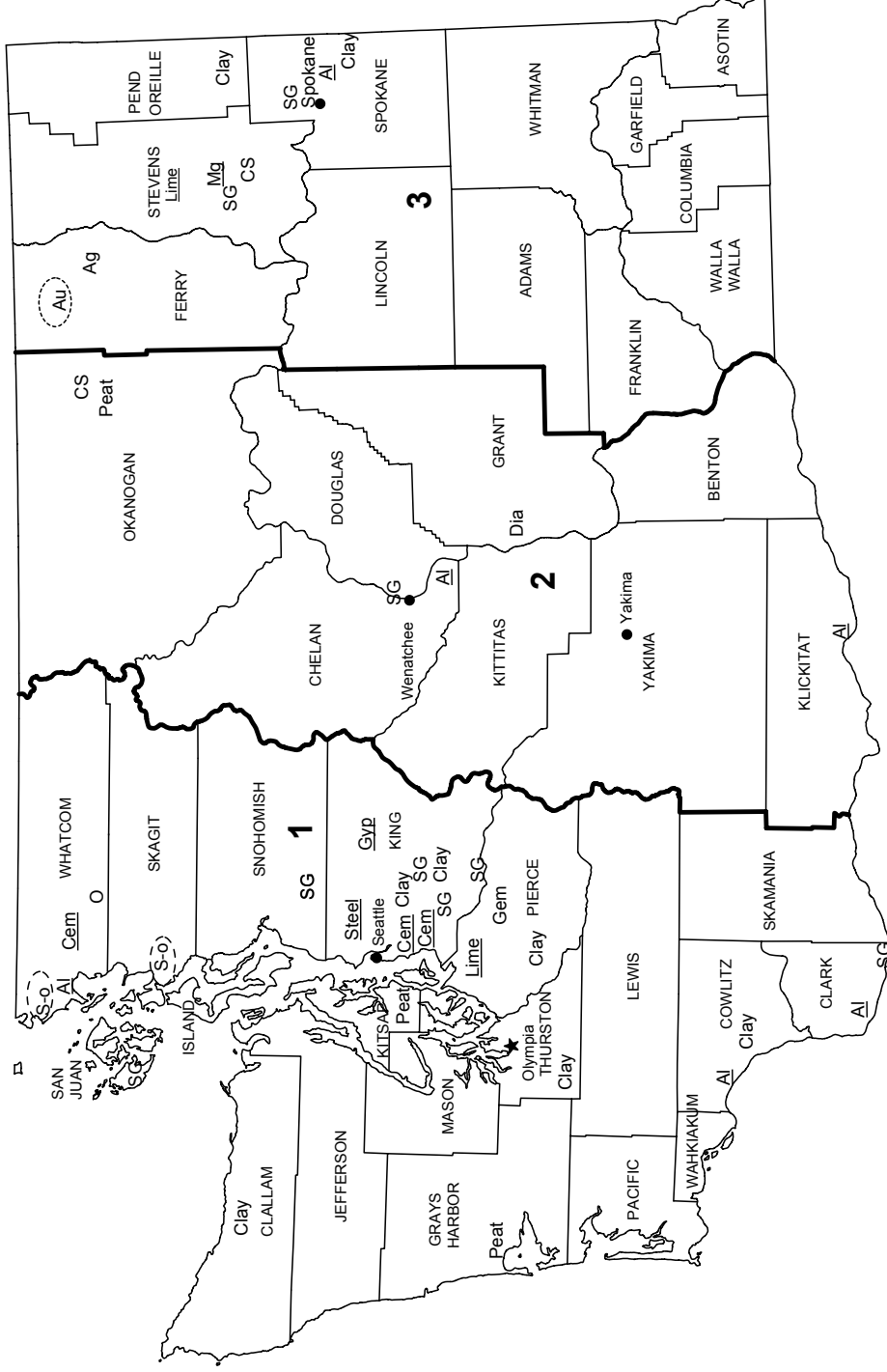
Peat Peat

S-o Sulfur (oil)

SG Construction sand and gravel

Steel Steel plant

○ Concentration of mineral operations



0 50 Kilometers

# THE MINERAL INDUSTRY OF WASHINGTON

**This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Washington State Department of Natural Resources, Division of Geology and Earth Resources, for collecting information on all nonfuel minerals.**

In 2003, the estimated value<sup>1</sup> of nonfuel mineral production for Washington was \$430 million, based upon preliminary U.S. Geological Survey (USGS) data. This was about a 1.5% decrease from that of 2002<sup>2</sup> and followed a 12.2% decrease from 2001 to 2002. The State remained 31st in rank among the 50 States in total nonfuel raw mineral production value, of which Washington accounted for more than 1% of the U.S. total.

In 2003, based on value, Washington's leading nonfuel mineral commodities were construction sand and gravel, portland cement, and crushed stone; the two aggregate commodities accounted for about 69% of the State's total nonfuel mineral value. Diatomite was next, the total value for these four mineral commodities being about 95% of the State's total nonfuel mineral value, followed by lime, and industrial sand and gravel (table 1).

In 2002, the decrease in value mostly resulted from the cessation of magnesium metal and gold production and drops in the production and values of lime, olivine, and crushed stone. Increases took place in the production of portland cement and construction sand and gravel, the values of which were up about \$6 million and \$3 million, respectively. All other changes were significantly smaller and inconsequential to the net result (table 1).

Based upon USGS estimates of the quantities produced in the 50 States in 2003, Washington continued to be second of 2 olivine-producing States, fourth of 4 States that produce diatomite, and seventh in construction sand and gravel. Additionally, the State was a significant producer of portland cement and crushed stone.

In 2003, the State increased in rank to 10th from 11th in the production of primary aluminum. (The primary aluminum and raw steel that were produced in Washington were processed from materials obtained from other domestic and foreign sources.) Following a 25% decrease in production from 2001 to 2002, primary aluminum production significantly increased in 2003, up by more than 50%, mostly owing to increases in aluminum prices. Owing to highly escalated energy costs, the production of primary aluminum in Washington had precipitously dropped in 2001; the significant decrease resulted from the closing of most of the State's primary aluminum plants. For many years prior to 2001, Washington had been (by far) first in the Nation in the production of primary aluminum; in 2000, the State accounted for about 1.05 million metric tons, or nearly 30% of the U.S. total primary production of the metal.

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<sup>1</sup>The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 2003 USGS mineral production data published in this chapter are preliminary estimates as of July 2004 and are expected to change. For some mineral commodities, such as construction sand and gravel, crushed stone, and portland cement, estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. Specialist contact information may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>; alternatively, specialists' names and telephone numbers may be obtained by calling USGS information at (703) 648-4000 or by calling the USGS Earth Science Information Center at 1-888-ASK-USGS (275-8747). All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

<sup>2</sup>Values, percentage calculations, and rankings for 2002 may differ from the Minerals Yearbook, Area Reports: Domestic 2002, Volume II, owing to the revision of preliminary 2002 to final 2002 data. Data for 2003 are preliminary and are expected to change; related rankings also may change.

TABLE 1  
NONFUEL RAW MINERAL PRODUCTION IN WASHINGTON<sup>1,2</sup>

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2001		2002		2003 <sup>p</sup>	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays, common	89	258	89	169	89	169
Gemstones	NA	25	NA	29	NA	29
Gold <sup>3</sup> kilograms	1,700	14,900	980	9,810	--	--
Sand and gravel, construction	41,400	220,000	43,200	223,000	42,000	218,000
Silver <sup>3</sup> kilograms	--	--	729	108	--	--
Stone, crushed	14,100	84,300	13,700	79,900	13,400	79,100
Combined values of cement (portland), diatomite, lime, magnesium metal (2001), olivine, peat, sand and gravel (industrial), and stone (dimension miscellaneous)	XX	178,000	XX	124,000	XX	133,000
Total	XX	498,000	XX	437,000	XX	430,000

<sup>p</sup>Preliminary. NA Not available. XX Not applicable. -- Zero.

<sup>1</sup>Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Recoverable content of ores, etc.

TABLE 2  
WASHINGTON: CRUSHED STONE SOLD OR USED, BY KIND<sup>1</sup>

Kind	2001				2002			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone <sup>2</sup>	10 <sup>r</sup>	1,900 <sup>r</sup>	\$10,400 <sup>r</sup>	\$5.48 <sup>r</sup>	10	1,920	\$11,200	\$5.82
Dolomite	17	561	2,620	4.67	25	537	2,530	4.72
Marble	1	W	W	8.82	1	W	W	9.46
Granite	10 <sup>r</sup>	1,270 <sup>r</sup>	6,900 <sup>r</sup>	5.42 <sup>r</sup>	6	1,040	5,860	5.66
Sandstone	6 <sup>r</sup>	W	W	14.41 <sup>r</sup>	6	W	W	6.20
Traprock	71 <sup>r</sup>	9,120 <sup>r</sup>	55,200 <sup>r</sup>	6.05 <sup>r</sup>	83	8,990	53,300	5.93
Volcanic cinder and scoria	1	W	W	6.47	1	W	W	8.22
Miscellaneous stone	9	580	2,470	4.26	12	697	3,030	4.34
Total or average	XX	14,100	84,300	6.00	XX	13,700	79,900	5.82

<sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.

<sup>1</sup>Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

<sup>2</sup>Includes limestone-dolomite reported with no distinction between the two.

TABLE 3  
WASHINGTON: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	\$8.59
Riprap and jetty stone	64	\$511	7.98
Filter stone	12	93	7.75
Other coarse aggregates	122	774	6.34
Total or average	198	1,380	6.96
Coarse aggregate, graded:			
Concrete aggregate, coarse	(2)	(2)	4.19
Bituminous aggregate, coarse	(2)	(2)	8.27
Bituminous surface treatment aggregate	(2)	(2)	4.24
Railroad ballast	48	276	5.75
Other graded coarse aggregates	25	126	5.04
Total or average	104	609	5.86
Fine aggregate (-3/8 inch):			
Stone sand, concrete	(2)	(2)	3.69
Screening, undesignated	(2)	(2)	5.15
Other fine aggregates	9	53	5.89
Total or average	82	413	5.04
Coarse and fine aggregate:			
Graded road base or subbase	641	2,780	4.33
Unpaved road surfacing	331	1,820	5.49
Terrazzo and exposed aggregate	W	W	9.92
Crusher run or fill or waste	102	444	4.37
Other coarse and fine aggregates	764	3,240	4.23
Total or average	1,840	8,270	4.50
Other construction materials	91	840	9.23
Agricultural:			
Agricultural limestone	(2)	(2)	3.86
Other agricultural uses	(2)	(2)	5.95
Total or average	5	21	4.20
Chemical and metallurgical:			
Cement manufacture	(2)	(2)	3.53
Flux stone	(2)	(2)	13.17
Chemical stone for alkali works	(2)	(2)	3.53
Total or average	69	847	12.28
Special:			
Asphalt fillers or extenders	(2)	(2)	9.43
Other fillers or extenders	(2)	(2)	10.53
Total or average	135	1,420	10.53
Other miscellaneous uses:			
Glass manufacture	(3)	(3)	4.74
Other uses not listed	(4)	(4)	8.27
Unspecified: <sup>5</sup>			
Reported	5,010	34,400	6.86
Estimated	6,100	31,000	5.13
Total or average	11,100	65,700	5.91
Grand total or average	13,700	79,900	5.82

W Withheld to avoid disclosing company proprietary data; included with "Other."

<sup>1</sup>Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

<sup>2</sup>Withheld to avoid disclosing company proprietary data; included in "Total."

<sup>3</sup>Withheld to avoid disclosing company proprietary data; included in "Grand total."

<sup>4</sup>Less than 1/2 unit.

<sup>5</sup>Reported and estimated production without a breakdown by end use.

TABLE 4  
WASHINGTON: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1 1/2 inch) <sup>2</sup>	91	661	W	W	W	W	103	681
Coarse aggregate, graded <sup>3</sup>	82	489	W	W	W	W	--	--
Fine aggregate (-3/8 inch) <sup>4</sup>	36	163	W	W	W	W	--	--
Coarse and fine aggregate <sup>5</sup>	1,470	6,190	289	1,720	75	361	--	--
Other construction materials	48	284	18	179	25	377	--	--
Agricultural <sup>6</sup>	--	--	W	W	W	W	--	--
Chemical and metallurgical <sup>7</sup>	W	W	--	--	W	W	--	--
Special <sup>8</sup>	--	--	W	W	W	W	--	--
Other miscellaneous uses <sup>9</sup>	--	--	W	W	--	--	--	--
Unspecified: <sup>10</sup>								
Reported	1,960	12,200	1,580	11,800	1,120	8,470	347	1,830
Estimated	4,100	22,000	390	2,200	1,200	5,500	460	1,700
Total	7,760	41,900	2,470	17,500	2,590	16,300	912	4,230

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregates.

<sup>3</sup>Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregates.

<sup>4</sup>Includes screening (undesignated), stone sand (concrete), and other fine aggregates.

<sup>5</sup>Includes crusher run (select material or fill), graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, and other coarse and fine aggregates.

<sup>6</sup>Includes agricultural limestone and other agricultural uses.

<sup>7</sup>Includes cement manufacture, chemical stone for alkali works, and flux stone.

<sup>8</sup>Includes asphalt fillers or extenders and other fillers or extenders.

<sup>9</sup>Includes glass manufacture and other specified uses not listed.

<sup>10</sup>Reported and estimated production without a breakdown by end use.